

Applicant : Bradley et al.
Serial No. : 09/546,085
Filed : April 10, 2000
Page : 5

Attorney's Docket No.: 11635-010001 / OTA 97-63

REMARKS

Status of the Claims

Pending claims

Claims 8 to 65, added in the response (mailed July 3, 2001) to the first office action on the merits (mailed January 3, 2001), are pending.

Claims added in the instant amendment

New claims 66 to 77 are added. Thus, after entry of the instant amendment, claims 8 to 77 will be pending.

The Restriction Requirement

The Patent Office has alleged that the pending claims of the application are directed to three separate and distinct inventions under 35 U.S.C. §121:

The instant application has been restricted to one of the following inventions under 35 U.S.C. §121:

Group I: Claims 8-41 and 63-64, drawn to a modified biological molecule, a microarray, classified in class 530, subclass 300, class 536 and subclass 123.1, class 436 and subclass 71, and 518.

Group II: Claims 42-62, drawn to a method for immobilizing a biological molecule, classified in class 435, subclass 6.

Group III: Claim 65, drawn to a kit comprising a device for imprinting an array, classified in class 436, subclass 518.

The Election

In response to the Restriction Requirement, Applicants elect Group I, claims 8 to 41 and 63 to 64, drawn to a modified biological molecule, a microarray, classified in class 530, subclass 300, class 536 and subclass 123.1, class 436 and subclass 71, and 518.

Support for the Claim Amendments

The specification sets forth an extensive description of the invention in the new claims. Support for new claims directed to compositions and methods for making and using modified biological molecules, including polypeptides, polysaccharides, lipids, and small molecules, can be found, *inter alia*, on page 8, lines 9 to 16; page 14, lines 11 to 20; and

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Examples 18 and 19, page 19, line 14 to page 21, line 2. Support for new claims directed various array surfaces can be found, *inter alia*, on page 7, lines 25 to 30. Support for new claims directed to compositions comprising a chemical compound having a cyclic or ring ether and an alkoxy silane can be found, *inter alia*, on page 10, line 25 to page 11, line 5.

CONCLUSION

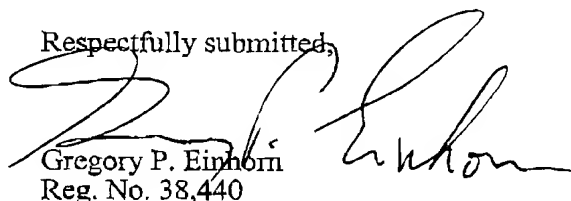
Applicants believe all claims pending in this application, including the claims entered in the instant amendment, are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If necessary, please apply additional and necessary charges, and apply all credits, to Deposit Account No. 06-1050.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (858) 678-5070.

Oct. 29, 2007

Respectfully submitted,



Gregory P. Einhorn
Reg. No. 38,440

Fish & Richardson P.C.
4350 La Jolla Village Drive, Suite 500
San Diego, CA 92122
Telephone: (858) 678-5070

Facsimile: (858) 678-5099

Version with Markings to Show Changes Made

Applicant : Bradley et al. Art Unit : 1656
 Serial No. : 09/546,085 Examiner : Suryaprabha Chunduru
 Filed : April 10, 2000
 Title : CHEMICALLY MODIFIED BIOLOGICAL MOLECULES AND
 METHODS FOR COUPLING BIOLOGICAL MOLECULES TO SOLID
 SUPPORT

The above-captioned application has been amended as follows:

In The Claims:

The following new claims have been added:

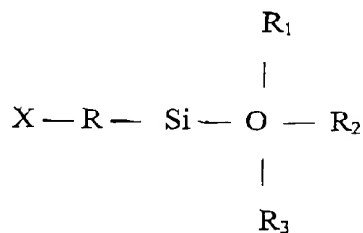
66. A process for making a modified biological molecule comprising the steps of:

- (a) providing a biological molecule comprising a guanine base or a cytosine base;
- (b) reacting the guanine base or the cytosine base with an N-bromosuccinimide at pH about 8.0 to form a brominated biological molecule; and
- (c) reacting the brominated biological molecule with a silane having the formula $\text{—HN—(CH}_2\text{)}_n\text{—Si(OR)}_3$, wherein $n = 3, 4, 5, 6, 7, 8, \text{ or } 9$.

67. The process of claim 66, wherein R is selected from the group consisting of —CH_3 , $\text{—C}_2\text{H}_5$, and $\text{—C}_3\text{H}_7$.

68. A process for making a modified biological molecule comprising the steps of:

- (a) providing a biological molecule;
- (b) providing a compound having a formula



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wherein X is a halide and R is a moiety chemically suitable for linking the biological molecule with the Si moiety;

(c) reacting the biological molecule with the compound of step (b) at near neutral pH.

69. The process of claim 68, wherein the halide is selected from the group consisting of a Cl, a Br and an I.

70. The process of claim 68, wherein the R group is selected from the group consisting of a —OCH_3 , and a $\text{—OC}_2\text{H}_5$.

71. The process of claim 68, wherein the compound of step (b) is selected from the group consisting of 8-bromocyltrichlorosilane, 8-bromocyltrimethoxysilane, 4-chlorobutylmethyldichlorosilane, and 3-iodopropyltrimethoxysilane.

72. The process of claim 66 and claim 68, wherein the biological molecule comprises a polypeptide or a peptide.

73. The process of claim 66 and claim 68, wherein the biological molecule comprises a polysaccharide or a saccharide.

74. The process of claim 66 and claim 68, wherein the biological molecule comprises a lipid.

75. The process of claim 66 and claim 68, wherein the biological molecule comprises a small molecule.

76. A process for making a microarray comprising a modified biological molecule comprising the steps of:

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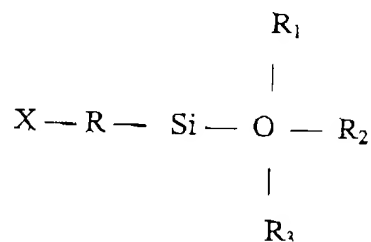
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- (a) providing a biological molecule;
- (b) providing a solid support;
- (c) providing a compound having a formula



wherein X is a halide and R is a moiety chemically suitable for linking the biological molecule with the Si moiety;

- (d) reacting the biological molecule with the compound of step (c) at near neutral pH, thereby making a modified biological molecule; and,
- (e) immobilizing the biological molecule in a plurality of discrete spots upon the solid support, thereby making a microarray.

77. A process for making a microarray comprising a modified biological molecule comprising the steps of:

- (a) providing a biological molecule comprising a guanine base or a cytosine base;
- (b) providing a solid support;
- (c) reacting the guanine base or the cytosine base with an N-bromosuccinimide at pH about 8.0 to form a brominated biological molecule;
- (d) reacting the brominated biological molecule with a silane having the formula $-HN-(CH_2)_n-Si(OR)_3$, wherein $n = 3, 4, 5, 6, 7, 8, \text{ or } 9$; thereby making a modified biological molecule; and,
- (e) immobilizing the biological molecule in a plurality of discrete spots upon the solid support, thereby making a microarray.